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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/743,969

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Luc Bouwens

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BARNES & THORNBURG LLP
P.O. BOX 2786
CHICAGO, IL 60690-2786

EXAMINER

HOLTON, STEVEN E

ART UNIT

PAPER NUMBER

2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/09/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/743,969	BOUWENS ET AL.	
	Examiner	Art Unit	
	Steven E. Holton	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 20 is objected to because of the following informalities: on the fifth line of the claim, the phrase 'which plane is span by stimulus...' should be "which plane is spanned by stimulus". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 recites a method of calibration for a display device that selects primary color targets "which can be reached by at least 80% of the pixels of the display". The embodiments of the method described within the disclosure do not show color targets that are reachable by at least 80% of the pixels in the display. In Fig. 3, each of the color target points (Rt, Bt, and Gt) as shown are only reachable by 1 of the 3 pixels in the display, making the targets only reachable by 33% of the pixels. Further, in Fig. 4a, color target points Rt1, Rt2, and Gt1 are not reachable by any of the pixels shown and

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color target points Gt2, Bt1, and Bt2 are reachable by only one pixel. This method of selecting color target points seems to teach against the choosing points that are reachable by 80% of the pixels of the display. Because claim 1 is the independent claim, all other claims are therefore similarly rejected. For the purposes of examination the Examiner interprets the claims to mean selection of color targets that can be reached by most of the pixels of the display.

Claims 4 and 5 are further rejected for the method of "determining a line of gravity" and using the line of gravity for selecting target points. The Examiner's best understanding of a 'line of gravity' is a line of force drawn from the center of gravity point in the direction of gravity acting on the center of gravity. However, the data utilized in the figures is an abstract mapping of color information about pixels. It is unclear how one skilled in the art would determine what direction gravity is acting on an abstract structure or how to select a line of gravity because any vector leading from the center of gravity could be considered a line of gravity. As shown in Fig. 4a the lines of gravity for the red, green, and blue areas all possess different slopes and point in different directions. The disclosure lacks explanation how these particular lines are selected rather than other potential lines of gravity.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

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applicant regards as the invention. The statements that the virtual target primary colors differ from either the center of gravity or the line of gravity "by up to 20%" is unclear regarding what measurable quality is being altered by 20%. Further definition of the 20% and what property is being altered by 20% is needed to better explain the claim language.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1, 7-18, and 21, are rejected under 35 U.S.C. 102(a) as being anticipated by Booth, Jr. et al. (USPgPub: 2003/0043088), hereinafter Booth

Regarding claims 1 and 21, Booth discloses a calibration method for a display device and associated device. The method comprises "determining virtual target primary colors which can be reached" by most of the pixels of the display (paragraphs 25, 26, and 33), "determining a color gamut defined by the virtual target colors (paragraphs 25, 26, and 33)", and "adjusting the drive currents to the sub-pixels to achieve a color inside the determined color gamut (paragraph 33). The Examiner notes that Booth further discloses the color gamut may be selected so that 80% to 90% of the pixels are able to achieve the selected colors (paragraph 33).

Regarding claims 7-9, Booth discloses selecting virtual target primary colors and a color gamut that can be achieved by all of the sub-pixels of the display (paragraph 26). All colors in a color gamut are produced from linear combinations of the primary colors, so Booth discloses selecting a color gamut wherein all colors of the gamut are achieved by a linear combination of the primary colors.

Regarding claim 10-15, Booth discloses selecting the color gamut, which includes the target primary colors, depending on the application of the display (paragraph 33). Booth further discusses embodiments with a color gamut achievable by 80-90% of the pixels that produces less color uniformity than a gamut that would be achievable by 100% of the pixels. The different embodiments would allow for selection of better color uniformity or a larger color saturation depending on the which embodiment was chosen.

Regarding claims 16 and 17, Booth discloses the recalculation of the color gamut at any time during the lifetime of the display to correct for aging of the display (paragraph 27).

Regarding claim 18, Booth discloses a system where the number of target primaries and real primaries are the same (paragraph 25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Booth in view of Kojima et al. (USPN: 6313806), hereinafter Kojima.

Regarding claim 6, as discussed above Booth discloses all of the limitations except, "wherein a target luminance for each target virtual primary is determined such that all or substantially all of the real primaries are able to realize the target luminance of the corresponding virtual primary."

Kojima discloses a color gamut configuration method that includes correcting the chromaticity of the display and then correcting the intensity of the display (col. 4, lines 16-26).

At the time of invention it would have been obvious to one skilled in the art to combine the teachings of Booth and Kojima to produce a color calibration system for a display device including luminance correction. The motivation would have been to combine the luminance correction of Kojima for the purpose of removing differences in brightness from the color corrected display. Thus, the combination of Booth and Kojima would have been obvious to one skilled in the art to produce a method as specified in claim 6.

6. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Booth in view of Ohtsuka et al. (USPgPub: 2003/0003544), hereinafter Ohtsuka.

Regarding claim 19, as discussed above Booth discloses all of the limitations except, "adjusting the drive current to the sub-pixels to achieve a colour inside the determined colour gamut comprises adjusting the drive current, not only of a first real primary colour which would have a negative drive stimulus value, but also of at least one other real primary colour which has a positive drive stimulus value."

Ohtsuka discloses a color calibration method for a display device that includes converting colors outside the range to points within the range based on alteration of the drive signals (paragraph 78).

At the time of invention it would have been obvious to one skilled in the art to combine the teachings of Booth and Ohtsuka. The motivation for doing so would be to allow sub-pixels unable to display certain colors to display a color closely related to the expected color. This allows the display to produce as close to completely matched image as achievable by the display unit. Thus, it would have been obvious to one skilled in the art to apply the adjustment method of Ohtsuka to the method of Booth to produce a method similar to the method of claim 19.

Regarding claim 20, Ohtsuka discloses projecting a color using the normal (orthogonal) projection from outside of the color gamut to inside the color gamut (paragraph 78).

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571) 272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Steven E. Holton
Division 2629
February 2, 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

